RELATIONSHIP BETWEEN KINANTROPOMETRIC CHARACTERISTICS OF PRESCHOOL CHILDREN AND THE LEVEL OF THE PHYSICAL ACTIVITY OF THEIR PARENTS

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Abstract
The aim of this research was to determine the relationship between the kinanthropometric characteristics of preschool children with the level of physical activity of their parents. The research was conducted on a sample of 83 preschool children in the fourth, fifth, and sixth year of life enrolled in four educational groups in the kindergarten "Čavlić." The children were measured in the area of morphological characteristics according to two values (ATV – body height, ATT –weight) and one derived measure (BMI – body mass index), in the area of motor abilities through six tests (SJED – sit down with right angle between legs, PK – load run, TRB – abdominal exercise 15 and 30 sec, HOD –walk backwards on all fours, VIS – pull up endurance, SKOK – standing long jump), and in the area of functional capabilities through a single test (POLIGON3 – polygon 3 min). The children's parents filled out the Baeck questionnaire about the level of their physical activity with four defined indices: work index, exercise intensity index, sports index, and free time index. Regarding the mothers' and fathers' indices, the kinanthropometric analysis of children's characteristics provided a statistically significant correlation only in the criteria of the mothers' free time index, and for this reason we can partially confirm the hypothesis which states that the children of physically more active mothers have better kinanthropometric characteristics, or that they will show better results in morphological characteristics, as well as motor and functional abilities.

Key words: *kinanthropometric characteristic, preschool children, physical activity, parents, free time*

Introduction

The main characteristic of preschool age is the growth and development of the child whereby many authors (Mišgoj - Duraković, 1999; Findak, 2001; Trajkovski, 2011) emphasize the importance of physical exercise and physical activity in this period as the most favorable time to stimulate their growth and development along with acquiring adequate living habits for life in the modern society. Also, at that age the child becomes familiarized with the surrounding environment and acquires the skills necessary for his or her further familiarization. Understanding the preschool period of the child as a sensitive period of his or her life includes the necessity to create opportunities for influencing the growth and development of the child's knowledge and abilities because missed out opportunities can hardly be compensated in later life. Appropriate physical activity, apart from affecting the child's development, also affects the normal functioning of all organs and organic systems. Also, a well-designed and implemented activity by a parent and/or a preschool teacher develops a positive attitude toward an active lifestyle. Social and economic changes of the modern society, i.e. changes in technology and demands from the field of work - practice, bring new expectations to the preschool teacher and the educational institution. It is indisputable that early childhood plays a significant role in its overall development and that this development is the result of complex and continuous interactions of the child with his or her material and social environment.

The child's activities, the conditions in which they take place, the amount of the child's initiative and autonomy depend on the preschool teacher, and this affects the overall socio-emotional, intellectual, and physical development in general (Šagud, 2006). The professional competence of a preschool teacher has a strong influence on the recognition and exploitation of the child's potential and the development of individual characteristics in different variations. It is well known that the preschool teacher can encourage (or limit) the development of the child with the appropriate (or inadequate) practice (Šagud, 2006). Given the current state of society, which, besides the positive side, is characterized by negative aspects such as inadequate movement, inadequate nutrition, heavy loads, parents and children necessarily become part of such a life. Due to the fact that obesity begins already in preschool age (Oliver et al., 2007), that children are inadequately physically active (Cardon et al., 2008), and that physical activity also depends on material conditions (Bower et al., 2007), as well as due to the way in which parents spend their free time with children (Verbeste et al., 2011), it is indispensable to turn to a healthy organization of physical activity of preschool children as well as the provision of quality free time to improve the quality of life of children and their parents. Free time is defined as the remaining time or time that is left after life-specific duties and as an activity perceived as providing joy through play and recreation (Haywood et al., 1995).

It is essential to enable preschool children to spend a large part of their free time playing, outdoors in the fresh air or in any other activity that means spending their free time together with their parents and peers. In the family, as a community of primarily parents and children, parents play a major and important role in creating free time. Today's parents have increasingly less time for their children, who, on the other hand, feel the need to spend quality time with their parents. The consequence of this imbalance between these two sides leads to the creation of free time that children spend on activities that lack muscular effort, that are carried out independently or with their parents who, due to the lack of time, consider spending time in front of the television as well-spent time with the child.

By accepting the fact that "the need to move is a basic biotic need and that the child through his or her own volition and fully commits to a spontaneous play or some other form of movement activity through, it can be concluded that from the point of view of the *useful* use of free time of parents and children, kinesiological activity has no impact" (Prskalo, 2005). Parents should be aware of the importance of quality time spent with their children because, in addition to all the obligations that are imposed nowadays, it is the time spent with the child that is important, but the way in which free leisure time is spent. The aim of this paper was to determine the possible relationship between the kinantropological features of preschool aged children and the level of their parents' physical activity. Within the kinantropological features of preschool children, three morphological characteristics, six motor and one functional ability were covered, while the level of physical activity of the parent was tested with the Baeck Questionnaire (Baecke et al., 1982).

Methods

Sample of respondents
The research was conducted on the sample of 83 preschool children, 47 boys and 36 girls, aged 4 to 6, who enrolled in institutions of preschool education in the area of Čavli, i.e. are enrolled in the kindergarten "Čavlić," and on the sample of 164 parents, 83 mothers and 81 fathers of these children.

Sample variables
The variable sample for children consisted of three morphological measures: body height (ATV), body mass (ATT), and body mass index (BMI), six motor variables for the motor efficacy estimate: load run (PK) –*agility*, walk backwards on al fours (HOD) – *reorganization of the motion stereotype*, abdominal exercise 15 and 30 secs (TRB15 and TRB30) – *repetitive trunk power*, pull-up endurance (VIS) – *static arm strength*, standing long jump (SKOK) – *explosive leg strength*, sit down with right angle between legs (SJED) –*lower extremity flexibility*, and a functional variable: Polygon 3 minutes (POLIGON) – *aerobic endurance* (Trajkovski, 2011).

The variable sample for parentsconsisted of the Baeck Questionnaire that evaluates the level of physical activity the parents:work index (IR), exercise intensity index (IV), sports index (IS), and free time index (ISV) (Baecke et al., 1982).

Experimental procedure
The research was conducted in June, during the school year 2015/2016. The data was collected for three weeks in the kindergarten "Čavlić." Prior to the beginning of the research, the official license of the kindergarten principal was requested for its implementation, as well as the parents' consent for their children to participate in the research. Four mixed groups (4-6 years) were included in the research. Parents of the children were questioned about their physical activity with the Baeck questionnaire that was personally delivered to them, along with an explanation on how to fill it out, when they brought or picked up their child from the kindergarten. Morphological characteristics of children were measured during the first two days, while throughout the following 14 days the children's motor skills were measured by applying certain tests. During the last four days, the Poligon test was conducted for 3 minutes to check the functional abilities by testing each day a single group divided into 5 subgroups. The children arrived to and left the gym together with the preschool teacher - researcher. The time of the measurement was in the morning (from 8.00 to 11.30 a.m.). All children that made up the sample had to be healthy when research was conducted.

Data Processing Methods
In all variables, the basic descriptive parameters were calculated separately for each criterion for each parent (work index, exercise intensity index, sports index, and free time index). In order to determine the difference between children in variables with respect to the parents' belonging to a particular category within each criterion (work index, exercise intensity index, sports index, and free time index), we used a multivariate variance analysis, and for univariate differences we used the univariate variance analysis. If the level F was significant, we used the Bonfferoni post - hoc test. Normality of data distribution was tested with the Kolmnogorov - Smirnov test.

Results and discussion

The results are presented in Table 1 and indicate a normal distribution of results.

Table 1. Normality of data distribution

VAR	D	P
ATV	0,07	0,20
ATT	0,12	0,15
SJED	0,12	0,15
PK	0,10	0,10
VIS	0,17	0,05
HOD	0,14	0,10
SKOK	0,06	0,20
TRB 15	0,12	0,15
TRB 30	0,08	0,20
POLIGON	0,13	0,10

Table 2. Basic descriptive parameters of respondents groups and the analysis of differences based on the work index, exercise intensity index, sports index, and free time index of mothers.

	INDEKS RADA														INTENZITET VJEŽBANJA											
	Ispod prosječan				Prosječan				Iznad prosječan						Ispod prosječan				Prosječan				Iznad prosječan					
VAR	AS	SD	MIN	MAX	AS	SD	MIN	MAX	AS	SD	MIN	MAX	F	p	AS	SD	MIN	MAX	AS	SD	MIN	MAX	AS	SD	MIN	MAX	F	p
ATV (cm)	**116,54**	**8,63**	**98**	**132**	**116,51**	**9,05**	**104,5**	**134**	**115,58**	**8,9**	**100,5**	**129**	**0,08**	**0,95**	**116,07**	**100,5**	**127,7**	**8,5**	**117,25**	**104,5**	**134**	**8,17**	**114,87**	**98**	**132**	**9**	**0,94**	**0,4**
ATI (kg)	21,3	4	14,5	31,1	22,16	5,15	15,8	36	21,7	5,63	15	36	0,22	0,8	20,96	15,8	27,4	3,53	22,31	16,7	36	5,39	21,24	14,5	36	4,99	0,42	0,66
SJED (cm)	**40,4**	**10,27**	**25**	**67**	**40,33**	**8,2**	**26**	**56**	**36,43**	**7,75**	**26**	**57**	**1,59**	**0,21**	**41,2**	**26**	**50**	**8,07**	**40,04**	**25**	**67**	**10,26**	**38,7**	**25**	**59**	**8,61**	**0,62**	**0,54**
PK (sec)	15,25	2,37	10,1	20,46	16,65	4,03	10,55	31,31	15,82	3,07	11,35	22,75	1,37	0,26	15,43	13,4	21,25	2,19	15,23	12,45	20,46	2,21	16,06	10,1	22,75	2,91	1,08	0,35
VIS (sec)	**5,97**	**5,87**	**0**	**18,74**	**5,1**	**6,65**	**0**	**28,53**	**6,59**	**7,07**	**0**	**24,73**	**0,33**	**0,72**	**5,96**	**0**	**18,07**	**6,19**	**6,53**	**0**	**28,53**	**6,56**	**5,9**	**0**	**24,73**	**6,54**	**0,16**	**0,85**
HOD (sec)	11,39	3,48	6,3	20,47	13,31	5,18	4,65	23,56	12,92	5,25	4,81	23,49	1,36	0,26	12,83	6,06	20,36	5,04	11,08	5,19	16,77	5,16	12,83	4,81	23,56	5,18	0,63	0,54
SKOK (cm)	**84,3**	**20,9**	**52**	**130**	**80,04**	**29,94**	**13**	**138**	**84,48**	**28,45**	**37**	**146**	**0,24**	**0,79**	**83,7**	**40**	**117**	**25,72**	**88,5**	**43**	**129**	**19,19**	**80,86**	**36**	**146**	**27,02**	**0,4**	**0,67**
TRB '15	6,37	1,87	2	9	6,41	2,02	3	11	6,35	2,17	3	11	0,01	0,99	7,1	5	10	2,18	6,74	4	11	1,96	6,03	2	11	1,92	0,24	0,78
TRB '38	**11,97**	**3,56**	**3**	**18**	**11,63**	**3,83**	**3**	**19**	**11,74**	**3,98**	**5**	**20**	**0,06**	**0,94**	**12,8**	**5**	**18**	**3,77**	**12,35**	**3**	**20**	**3,95**	**11,32**	**3**	**20**	**3,47**	**0,06**	**0,94**
POLIGON (m)	379	24,23	335	440	370,93	31,29	150	435	380,87	29,49	345	440	0,54	0,59	379,3	345	405	15,36	381,96	335	440	28,39	377,16	340	440	26,99	0,67	0,52
	INDEKS SPORTA														INDEKS SLOBODNOG VREMENA											
	Ispod prosječan				Prosječan				Iznad prosječan						Ispod prosječan				Prosječan				Iznad prosječan					
VAR	AS	SD	MIN	MAX	AS	SD	MIN	MAX	AS	SD	MIN	MAX	F	p	AS	SD	MIN	MAX	AS	SD	MIN	MAX	AS	SD	MIN	MAX	F	p
ATV (cm)	**115,66**	**9,23**	**98**	**129,5**	**118,33**	**7,18**	**106,6**	**134**	**116,51**	**9,12**	**100,5**	**131**	**2,53**	**0,1**	**116,63**	**8,44**	**100,7**	**132**	**116,05**	**8,8**	**100,5**	**134**	**115,69**	**8,98**	**98**	**131**	**0,07**	**0,93**
ATT (kg)	21,65	5,86	14,5	36	21,9	3,89	17	35,2	21,21	4,5	15,8	36	0,13	0,88	21,7	4,88	14,5	36	21,36	4,72	15	35,2	22,12	5,06	16	36	0,15	0,86
SJED (cm)	40,77	10,79	25	67	37,97	6,87	25	50	38,73	8,53	23	56	0,8	0,45	41,96	9,36	29	67	36,49	8,07	23	52	40,94	8,45	31	59	3,69	0,03*
PK (sec)	15,96	2,72	10,1	21,59	15,51	2,59	11,35	22,75	16,22	4,36	10,55	31,31	0,34	0,71	14,91	2,32	10,55	19,59	16,46	3,73	12,3	31,31	16,02	2,67	10,1	20,46	1,98	0,14
VIS (sec)	**5,14**	**5,42**	**0**	**22,27**	**7,17**	**7,71**	**0**	**28,53**	**5,57**	**5,55**	**0**	**16,54**	**0,84**	**0,44**	**9,05**	**8,18**	**0**	**28,53**	**4,76**	**4,88**	**0**	**18,07**	**4,06**	**4,56**	**0**	**18,54**	**5,04**	**0,01***
HOD (sec)	13,04	4,15	6,86	20,5	11,85	5,31	4,81	23,56	11,77	4,67	4,65	21,1	0,64	0,53	10,12	4,15	4,65	20,5	13	4,76	6,3	23,49	13,94	4,54	6,47	23,56	4,72	0,01*
SKOK (cm)	**78,67**	**25,96**	**56**	**129**	**87,71**	**25,2**	**51**	**146**	**82,64**	**29,57**	**13**	**138**	**0,93**	**0,4**	**90,48**	**29,11**	**57**	**146**	**79,31**	**24,64**	**15**	**130**	**80,06**	**22,38**	**43**	**125**	**1,65**	**0,2**
TRB '15	6,03	2,13	2	11	7,03	1,89	3	11	6,23	1,9	3	10	2,14	0,12	6,81	2,15	2	11	6,36	2,03	3	11	6,12	1,73	3	9	0,71	0,49
TRB '38	**11,5**	**4,24**	**3**	**20**	**12,77**	**5,01**	**8**	**19**	**11,18**	**5,69**	**3**	**18**	**1,48**	**0,23**	**12,93**	**4,51**	**3**	**19**	**11,9**	**5,64**	**5**	**20**	**11,18**	**2,7**	**6**	**15**	**0,51**	**0,6**
POLIGON (m)	376	28,14	340	440	386,94	24,14	350	435	365,91	33,8	150	425	2,28	0,11	387,78	26,69	350	440	372,69	44,59	150	440	371,76	23,25	335	425	1,68	0,19

*Index rada - Work index, intenzitet vježbanja – exercise intensity; indeks sporta – sports index; indeks slobodnog vremena – free time index
**ispodprosječan – below average; prosječan – average; iznadprosječan – above average

Based on the obtained results we can conclude that the multivariate analysis of the variance did not reveal a significant difference between the children's groups with respect to the mothers' work index (F =0.97, p=0.05). Also, the univariate analysis did not resultin significant differences. From the obtained results we conclude that there is no correlation between the measured variables in children and the work index criterion of their mothers, which means that a higher or lower work index of mothers does not affect better or worse kinantropological characteristics of children. The multivariate analysis of the variance did not reveal a significant difference between the children's groups with respect to the mothers' exercise intensity index (F = 0.94, p = 0.54).

Also, the univariate analysis did not result in significant differences. From the obtained results we conclude that there is no correlation between the measured variables in children and the criterion of the exercise intensity index of their mothers, which means that a higher or lower work index of mothers does not affect better or worse kinantropological characteristics of children. Based on the results it is observable that the multivariate analysis of the variance did not reveal a significant difference between the children's groups with respect to the mothers' sports index (F = 0.94, p = 0.54). Also, the univariate analysis did not result in significant differences. Therefore we can conclude that there is no correlation between the measured variables in children and the sports index criterion of their mothers, which means that a higher or lower sports index of mothers does not affect better or worse kinantropological characteristics of children. We can also conclude that the multivariate analysis of the variance did not reveal a significant difference between the children's groups with respect to the free time index of mothers (F = 1.47; p = 0.10).

However, considering this criterion, the analysis of the variance found that mothers with different free time indices differ in the SJED, VIS, and HOD variables, i.e. in the flexibility of lower extremities, static arm strength, and coordination. The subsequent post - hoc test in the variable SJED found that only those children differ whose mothers have a below average and average free time index (p = 0.04), while there are differences between the other groups. In the variable VIS, those children differ that show a below average and average free time index (p = 0.02) and those whose mothers have a below average and above average free time index (p = 0.03). There is no significant difference between the average and above average index.

Differences were also obtained in the variable HOD between those children whose mothers have below average and average free time index (p = 0.04) and mothers with a below average and above average free time index (p = 0.02). Similar results were also obtained in the research by Trajkovski (2011), where the connection was partially confirmed between the kinantropometric characteristics of children and their parents' nutrition levels, but the connection between the morphological characteristics of parents and the motor and functional abilities of their children was not established. Also, Trajkoviski et al. (2014) obtained in their research a connectedness between mothers in terms of their work index, which means that the more educated mothers are the better results they achieved and that different social statues have an impact on physical activity of their children. What the fathers are concerned, connectedness was observed in the variables of household income and the level of education with the work index, sports index, and free time index. In other words, fathers with a lower level of education and lower incomes spend more of their free time with their children, which implies the need

and importance of encouraging the parents and preschool teachers outdoors because even other authors (Trajkovski, 2011, Trajkovski et al., 2014) have come to the conclusion that such physical activity leads to the improvement and development of children's kinantropological characteristics.

When observing life in today's modern society characterized predominantly by a sedentary way of life, children need the incentive of adults, especially their parents, to create an atmosphere of quality free time, because even other authors (Pejčić, 1996, Trajkovski, 2011) have concluded that the child in today's family environment does not have enough opportunity to satisfy his or her needs for movement and play. The obtained results of the connectedness between kinantropometric characteristics of children and the level of the mothers' physical activity show a correlation between the mothers' free time index and the better motor skills of children, but not better anthropometric morphological characteristics and functional abilities. Consequently, we can conclude that a higher free time index of mothers is a good indicator of the physical activity of children, i.e. of a higher quality of their free time.

Table 3. Basic descriptive parameters of the respondent groups and the analysis of differences with respect to the criteria of the work index, exercise intensity index, sports index, and free time index of fathers.

	INDEKS RADA														INTENZITET VJEŽBANJA											
	Ispod prosjeka				Prosjek				Iznad prosjeka						Ispod prosjeka				Prosjek				Iznad prosjeka			
VAR	AS	SD	Min	Max	AS	SD	Min	Max	AS	SD	Min	Max	F	p	AS	SD	Min	Max	AS	SD	Min	Max	AS	SD	Min	Max	F	p
AIV (cm)	**115,81**	**8,9**	**98**	**134**	**115,49**	**8,33**	**100,5**	**132**	**117,14**	**8,9**	**101**	**130,6**	**0,2**	**0,82**	**116,25**	**10,58**	**104,5**	**134**	**117,2**	**9,79**	**98**	**127,7**	**115,99**	**7,5**	**100,5**	**125,5**	**0,12**	**0,89**
ATI (kg)	21,77	5,08	15,8	36	21,06	3,99	15,8	29	21,67	5,14	14,5	36	0,13	0,88	21,31	6,13	15,8	35,2	21,56	3,45	17,2	27,3	20,54	3,13	15,8	26,9	0,2	0,82
SJED (cm)	**40,33**	**9,67**	**25**	**67**	**39,53**	**7,91**	**23**	**52**	**36,26**	**7,74**	**25**	**53**	**0,2**	**0,82**	**31,25**	**5,75**	**25**	**40**	**38,7**	**11,28**	**26**	**59**	**38,93**	**7,63**	**23**	**52**	**2,35**	**0,11**
PK (sec)	16,05	5,66	10,1	31,31	15,79	2,3	11,35	21,25	15,56	2,78	10,55	19,68	2,35	0,11	15,88	2,48	12,46	19,59	14,19	1,97	10,1	18,09	16,75	4,77	13,07	31,31	1,48	0,24
VIS (sec)	**5,59**	**5,52**	**0**	**22,27**	**6,65**	**7,55**	**0**	**24,73**	**7,01**	**7,47**	**0**	**28,53**	**1,48**	**0,24**	**5,29**	**4,55**	**0**	**10,37**	**5,97**	**7,4**	**0**	**22,27**	**5,3**	**4,9**	**0**	**15,17**	**0,05**	**0,95**
HOD (sec)	12,32	4,96	5,61	23,49	12,13	4,31	4,81	20,36	12,01	4,88	4,65	23,56	0,03	0,97	10,95	4,36	5,61	19,31	10,48	3,17	6,06	17,3	13,04	4,93	8,5	22,25	1,19	0,32
SKOK (cm)	**89,24**	**23,7**	**15**	**150**	**85,35**	**30,58**	**40**	**146**	**82,58**	**28,96**	**37**	**138**	**0,06**	**0,95**	**81,88**	**21,94**	**58**	**124**	**90**	**15,4**	**68**	**114**	**75,93**	**26,55**	**15**	**115**	**1,14**	**0,33**
TRB '15	6,47	1,94	3	11	5,88	1,93	2	9	6,89	2,28	4	11	1,15	0,33	7	1,93	5	10	6,6	1,9	4	10	6	2,08	3	8	0,69	0,51
TRB '30	**11,78**	**3,55**	**5**	**20**	**10,88**	**3,5**	**5**	**16**	**13,11**	**4,19**	**8**	**20**	**1,68**	**0,19**	**12,25**	**3,45**	**8**	**18**	**12,5**	**3,05**	**9**	**18**	**11,29**	**3,54**	**5**	**15**	**0,43**	**0,65**
POLIGON (m)	376,11	43,31	150	440	372,94	23,52	335	430	382,37	27,81	340	435	0,32	0,73	384,38	25,13	340	425	385,5	25,44	335	420	361,07	64,19	150	420	1,03	0,37
	INDEKS SPORTA														INDEKS SLOBODNOG VREMENA											
	Ispod prosjeka				Prosjek				Iznad prosjeka						Ispod prosjeka				Prosjek				Iznad prosjeka			
VAR	AS	SD	Min	Max	AS	SD	Min	Max	AS	SD	Min	Max	F	p	AS	SD	Min	Max	AS	SD	Min	Max	AS	SD	Min	Max	F	p
AIV (cm)	**115,9**	**9,31**	**100,7**	**134**	**117,42**	**8,07**	**100,5**	**132**	**114,99**	**8,05**	**98**	**125,8**	**0,37**	**0,69**	**116,59**	**8,51**	**100,7**	**134**	**114,45**	**9,85**	**98**	**131**	**116,94**	**7,83**	**101**	**132**	**0,59**	**0,56**
ATI (kg)	22,29	5,85	14,5	36	21,13	3,25	15,8	27,3	20,39	3,05	16,7	26,9	1,1	0,34	22,33	5,24	15,8	36	21,54	5,6	15	36	20,57	3,04	14,5	25,4	0,9	0,41
SJED (cm)	**40,64**	**9,5**	**25**	**67**	**37,89**	**6,94**	**26**	**57**	**37,11**	**9,8**	**25**	**59**	**1,26**	**0,29**	**40,18**	**8,72**	**25**	**57**	**39**	**10,69**	**25**	**67**	**38**	**7,45**	**25**	**52**	**0,41**	**0,67**
PK (sec)	16,14	2,96	10,55	22,75	15,15	2,32	11,35	21,25	15,81	4,43	10,1	31,31	0,66	0,52	15,34	2,48	11,43	21,59	16,05	4,24	10,1	31,31	16,34	2,93	10,55	22,75	0,74	0,48
VIS (sec)	**5,45**	**5,34**	**0**	**18,54**	**8,22**	**9,07**	**0**	**28,53**	**5,65**	**5,29**	**0**	**15,17**	**1,31**	**0,27**	**6,85**	**7,93**	**0**	**28,53**	**5,97**	**6,16**	**0**	**24,73**	**5,28**	**5,24**	**0**	**18,74**	**0,42**	**0,66**
HOD (sec)	12,6	4,55	4,65	23,49	12,06	5,33	4,81	22,25	11,42	4,79	5,61	23,56	0,4	0,67	11,09	4,21	5,19	20,5	12,7	4,91	4,81	22,25	13,35	5,18	4,65	23,56	1,76	0,18
SKOK (cm)	**81,66**	**26,52**	**36**	**138**	**86,79**	**27,67**	**40**	**146**	**84,67**	**25,11**	**13**	**130**	**0,27**	**0,76**	**84,88**	**27,12**	**36**	**135**	**86,71**	**28,62**	**15**	**146**	**78,22**	**21,94**	**45**	**138**	**0,69**	**0,5**
TRB '15	6,32	2,14	2	11	6,79	2,04	3	11	6,39	1,75	4	9	0,36	0,7	6,59	2,06	2	11	6,5	2,09	3	11	6,17	1,97	3	10	0,29	0,75
TRB '30	**11,66**	**4,12**	**5**	**20**	**12,58**	**3,58**	**5**	**19**	**11,78**	**2,88**	**7**	**16**	**0,41**	**0,67**	**11,94**	**3,6**	**5**	**19**	**12,08**	**4,24**	**5**	**20**	**11,65**	**3,5**	**6**	**18**	**0,08**	**0,92**
POLIGON (m)	375	27,56	335	440	387,11	25,41	345	435	370,83	60,06	150	420	1,06	0,35	384,71	25,13	335	435	369,17	55,14	150	440	375,48	22,98	345	430	1,44	0,24

*Index rada - Work index, intenzitet vježbanja – exercise intensity; indeks sporta – sports index; indeks slobodnog vremena – free time index
**ispodprosječan – below average; prosječan – average; iznadprosječan – above average

Based on the results we can conclude that the multivariate analysis of the variance did not reveal a significant difference between the children's groups with respect to the fathers' work index (F = 0.74; p = 0.77). Also, the univariate analysis did not result in significant differences. From the obtained results we conclude that there is no correlation between the measured variables in children and the work index criterion of their fathers, which means that a higher or lower work index of fathers does not affect better or worse kinantropological characteristics of children.

The results show that the multivariate analysis of the variance did not reveal a significant difference between the children's groups with respect to the fathers' exercise intensity index (F=0,69; p=0,81). Also, the univariate analysis did not result in significant differences.

From the obtained results we conclude that there is no correlation between the measured variables in children and the exercise intensity index of their fathers, which means that a higher or lower exercise intensity index of fathers does not affect better or worse kinantropological characteristics of children.

The results indicate that the multivariate analysis of the variance did not reveal a significant difference between the children's groups with respect to the fathers' sports index (F=0,70; p=0,83). Also, the univariate analysis did not result in significant differences. From the obtained results we conclude that there is no correlation between the measured variables in children and the sports index of their fathers, which means that a higher or lower sports index of fathers does not affect better or worse kinantropological characteristics of children.

The multivariate analysis of the variance did not reveal a significant difference between the children's groups with respect to the fathers' free time index (F=1,28; p=0,21). Also, the univariate analysis did not resultin significant differences.

From the obtained results we conclude that there is no correlation between the measured variables in children and the free time index of their fathers, which means that a higher or lower free time index of fathers does not affect better or worse kinantropological characteristics of children. By comparing the obtained results of the mothers' and the fathers' free time indices, we find that mothers have an impact on the better or worse

kinantropological characterstics of their children, while fathers do not. This leads to the conclusion that mothers spend more of their free time with their children, unlike their fathers, which should be kept in mind and attempted to change it.

It should be attempt to equalize the amount of free time which mothers and fathers spend their with their children and thus participate in the overall development and upbringing of their children.

The obtained results of the degree of connectedness between kinantropological characteristics of children with the level of physical activity of fathers indicate that there is no statistically significant correlation.

Conclusion

By reflecting on the influence and characteristics of the modern society on our course and style of life, we can conclude that mothers spend more time with their children than fathers, but we can also conclude that the mothers' free time is still not at the desirable level. Similarly, the differences in the free time between rural and urban environments today have a tendency to take over the characteristics of urban environments. We can conclude that it is very difficult, but nevertheless necessary, to respond to the demands of the modern society and lifestyle so that physical activity and good quality of free time become a priority.

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RELACIJE KINANTROPOMETRIJSKIH ZNAČAJKI PREDŠKOLSKE DJECE I RAZINE TJELESNE AKTIVNOSTI NJIHOVIH RODITELJA

Sažetak

Cilj ovog istraživanja bio je utvrditi povezanost kinanthropometrijskih obilježja djece predškolske dobi s razinom tjelesne aktivnosti njihovih roditelja. Istraživanje je provedeno na uzorku od 83 predškolske djece u četvrtoj, petoj i šestoj godini života upisanih u četiri odgojno-obrazovne skupine u vrtiću "Čavlić". Djeca su mjerena na području morfoloških svojstava prema dvije vrijednosti (ATV - visina tijela, ATT-težina) i jednoj izvedenoj mjeri (BMI - indeks tjelesne mase), a u području motoričkih sposobnosti kroz šest testova (SJED - sjedeći s pravim kutom između nogu, PK - trčanje, TRB - abdominalna vježba u 15 i 30 sekundi, HOD – hodanje natrag unazad 'na sve četiri', VIS – izdrćaj u visu, SKOK – skok u dalj s mjesta), te u području funkcionalnih sposobnosti kroz jedan test (POLIGON3 - poligon 3 min). Dječji roditelji ispunili su Baeckov upitnik o razini svoje tjelesne aktivnosti s četiri definirana indeksa: radni indeks, indeks intenziteta vježbanja, sportski indeks i indeks slobodnog vremena. Što se tiče indeksa majke i očeva, kinanthropometrijska analiza dječjih obilježja pokazala je statistički značajnu korelaciju samo u kriteriju indeksa slobodnog vremena majki i zbog toga možemo djelomično potvrditi hipotezu koja navodi da djeca fizički više aktivnih majki imaju bolje kinanthropometrijske karakteristike, ili će pokazati bolje rezultate u morfološkim karakteristikama, kao i u motoričkim i funkcionalnim sposobnostima.

Ključne riječi*: kinanthropometrija, predškolci, tjelesna aktivnost, roditelji, slobodno vrijeme.*

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